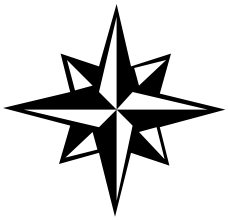
The Wright Information

A Treasure Hunt for Grades 4-6

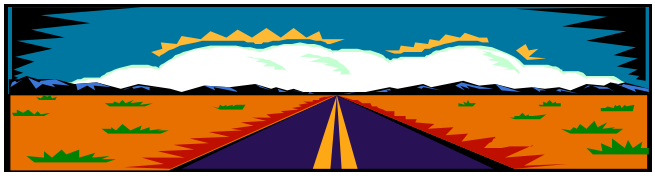


**(Let us place the Wright Brothers in history back in 1900.
What can we learn about their world and times?)**

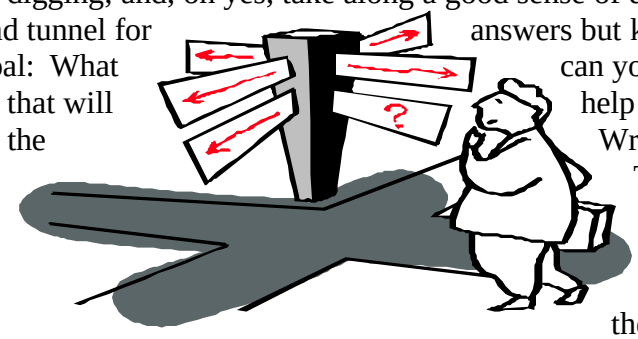
Instructions:

There is an abundance of information available about the Wright Brothers and the invention of the airplane. So much information, in fact, that it can make your head spin like a propeller! The big picture of the world of two young men from Dayton, Ohio in 1900 is lost if we don't step back and look at America 100 years ago the way the Orville and Wilbur Wright experienced it. The purpose of this activity is to help you see the historical *context* of the Wright's world. To get the *Wright Information* for this Treasure Hunt, we will seek selected information across four themes:

A.) Place (Geography)
B.) Time (History)
C.) Tools (Technology)
D.) Ideas!



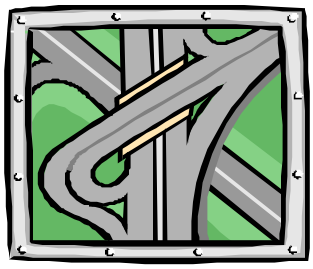
Each theme will pose a few questions for you (alone, paired, or in a group of three or four) to answer about the life and times of the Wrights. As with any treasure hunt, be prepared to carry a map, pencils and notebook; bring a shovel (Internet access) to do some (information) digging; and, oh yes, take along a good sense of direction. You will have to excavate and tunnel for answers but keep in mind the real treasure, the real goal: What can you learn about life back 100 years ago that will help you understand the importance of what the Wright Brothers accomplished? The last theme, Ideas, will include some *Big Questions* to see if you can explain the how the Wrights were connected to the past and secured to their present, but also to our future. A great source for answering extra questions you may have on your treasure hunt can be found at NASA Quest: http://quest.arc.nasa.gov/



Themes / Questions:

A.) Place (Geography)

The Wright Brothers lived in a small house on 7 Hawthorn Street in Dayton, Ohio in the United States of America. They first flew their airplane on the sands at Kitty Hawk, North Carolina. And you certainly know where you are located on a map! Let us go to Mapquest to find some *modern* answers for time and place questions about the geography of the Wright Brothers, and to find where *you* fit into the picture. Where did they live and where did they first fly? We will do a "now and back then" comparison to provide some perspective. Remember, as with all of these questions in the treasure hunt, you are after some answers but also a larger perspective about



NOW: A few early 21st Century Questions; be sure to record your answers in your logbook.

- If you were to drive by car from Dayton to Kitty Hawk **today,** how long would it take? (You do not need an address for Kitty Hawk; the city name is fine.)

- How many miles apart are these two locations, Dayton and Kitty Hawk?

http://www.mapquest.com/directions/

Scroll down that same Mapquest page to the "Route Overview" map.

- Based on that map can you name the capital cities of the states of Ohio, North Carolina, and Kentucky?

- In addition, notice the capital of the United States. On the right of the map there are "Zoom Out" bars. Click on the bar directly below the highlighted bar.

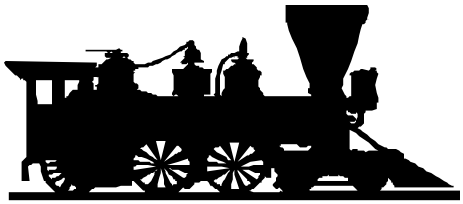
- Does this zoom-out view show where you live? If not, click on the next lower bar.

- Is your town within this map?

Go back to Mapquest and enter information for your school or home address.
http://www.mapquest.com/directions/

- If you were to drive by car from *your home or school* to Kitty Hawk today, how long would it take?

- How many miles apart are these two locations, *your home or school,* and Kitty Hawk?



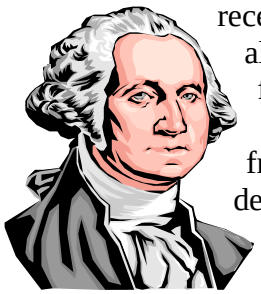
BACK THEN: A few early 20th Century Questions; be sure to record your answers.

Wilbur Wright first traveled (with a map!) from Dayton to Kitty Hawk in September of 1900. He took two trains along the way. However, there were no roads or bridges to his destination on the Outer Banks of North Carolina and Kitty Hawk Bay. His trip took longer than he expected. He had to take a boat ride to complete his journey.
http://www.nps.gov/wrbr/indepth/trav_kitt.htm

- How long did it take Wilbur to travel from Dayton to Kitty Hawk in 1900?
- Compare that time to how long it would take a person to drive between Dayton and the Outer Banks of Kitty Hawk today. What is the difference in days and hours? You can round out the answer to hours.
- Can you *estimate* how long it would take you to travel from *your home or school* to Kitty Hawk today if you traveled at the 1900 Wilber rate?
- If you were to *fly* today from your home to Kitty Hawk, how long would the journey take you?
- Has the airplane made a difference in the speed of travel over the past 100 years?

B.) Time (History)

What does 25 cents have to do with the Wright Brothers and the history of aviation? Well, two states, North Carolina and Ohio, are especially proud of the Wright Brothers. You can tell this by the images each state contributed to The 50 State Quarters® Program. These quarters have recently come into circulation.



Notice that George Washington is always on the front of the coin but the reverse, or back, is different for each state. Look in your change at lunchtime and you will see quarters from these states and others as well. Check with your friends. Eventually, all 50 states will have a special quarter dedicated to them featuring one or two examples of their natural resources or highlighting an important moment in history. Since these quarters are being introduced over ten years, your state may or may not have a quarter minted in their honor at this time. The State Quarters Program started in 1999 and will end in 2008.

The order is determined by the year the state joined the United States of America. When a new state becomes part of our nation, an extra star becomes part of our flag. Based on this bit of information about timing and history, you can answer these questions using the US Mint 50 State Quarters® Program site.
http://www.usmint.gov/mint_programs/50sq_program/index.cfm?action=schedule

- How many stars did the Wright Brothers see on the American Flag back in 1900 when they took the long journey from Dayton to Kitty Hawk?

- List the territories that became states *after* 1900.

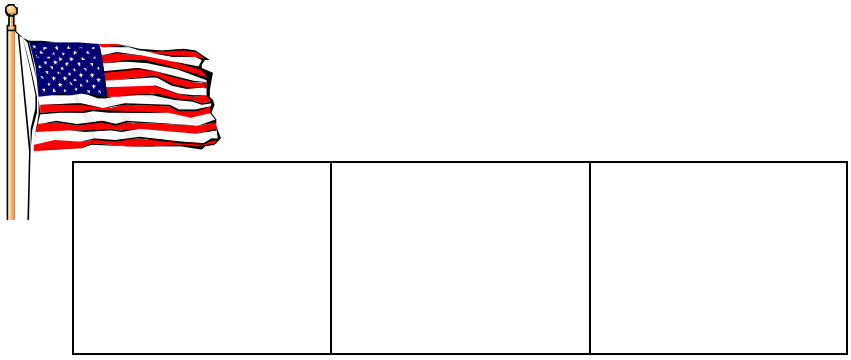
- When President Howard Taft witnessed Orville Wright flying at Fort Meyers near Washington, DC in 1909, how many stars were on the American Flag?

- Click on Ohio on the US Mint page. Exactly when did Ohio join the Union? In what year was their quarter minted? What is their state motto?

- Exactly when did North Carolina join the Union? In what year was their quarter minted? And what is their state motto?

- What about your state; has the new quarter been minted? If yes, why was the image and motto chosen? If not, what do you think it will look like when it appears? Do you think an aviation theme will be selected for your state? Say why or why not.

- We now know the flag did not always have 50 stars. Draw what you think the star arrangement looked like in 1900. Take the time to make a clear arrangement. Try it a second way or a third to you have it the way you think it should look.



- Now compare your drawings to the historical flag shown at this site.
http://www.usflag.org/toc.flags.html
How many Presidents of the United States served with this flag arrangement?

C.) Tools (Technology)

We have explored a little of the geography and history of the United States back in 1900 at the time the Wrights were beginning to experiment with their first glider. The Wright Brothers eventually invented and perfected a new way of transportation, the airplane. What were the existing means of getting around back in 1900? What were some of the tools of everyday transportation back in 1900? Let us concentrate on transportation technology (tools) and try to answer these questions from the four interesting pages of this link.

http://www.pbs.org/wgbh/amex/kids/tech1900/feature.html

- In 1900, automobiles were around but what were three other ways of travel that were more popular in American cities? These pictures and drawings are from New York City but Dayton would have been similar.

- How many miles of roads in America were actually paved in 1900?

- There were horses on the main streets as well as back roads in 1900. What was it like in New York City in 1900 to have horses in the streets?

- In 1903, a world speed record was set in the automobile. Do we consider this record exceptional today?

- Orville Wright loved cars and wanted to build one with Wilbur. However, Wilbur thought cars would never amount to anything. He said they were too noisy and would fall to pieces because of rough roads and constant rattling. Orville worked on cars with a friend and learned a lot about motors as a result. Predictions about tools and new technology are hard for anyone to get *right*, even for famous inventors who were especially *Wright* about flying machines. This link is from 1900. http://www.pbs.org/wgbh/amex/kids/tech1900/snapshot.html

- People were asked to predict life ahead 100 years to our time in 2000 and beyond. Read through the list and think about each prediction. List three predictions that were *wrong* and three that were *right*. What were your favorite speculations from the 1900 list, both incorrect and correct?

Predictions about tools and technology in 2000 made in 1900!

Three *wrong* predictions about life in 2000.	Three *correct* predictions about life in 2000.
1.)	**1.)**
2.)	**2.)**
3.)	**3.)**
Favorite:	**Favorite:**

The one tool of 1900 transportation technology the Wright Brothers loved was the **bicycle**. In fact, they built and repaired their own bicycles for a living and owned their own small factory. The chances are you own and ride a bicycle today; it might be your favorite mode of transportation.

Think about the **materials** that make up the bicycle, the shape and function of the different **parts**, and the **skills** you would need to have in order to repair or make a bicycle.

Think about the materials and tools that were used to construct these early bicycles.

- Now study this picture of a Wright Brothers bicycle. It was called the *Van Cleave* in honor of some of their father's ancestors. The Wrights were very proud of this bike because they made it by hand.

http://www.first-to-fly.com/History%20Images/vancleve.JPG

- Trace or draw or paste the Wright Brothers' bicycle in the box below and fill out the table regarding the **materials**, **parts** and **skills** needed to make it.

The Wright Brothers Bicycle: the *Van Cleave.*

MATERIALS	PARTS	SKILLS

Metal	Chains, tube steel, hubs, spoke wires,	Metal cutting and bending ability/tools
Wood		
Cloth		
Rubber		
Innovations	#1	#2

The Van Cleave was made of metal, wood, cloth and rubber. However, it also has two innovations that you cannot see. Read this passage and discover what these innovations are. Add them to your illustration with labels and arrows and include them in the chart.
http://www.first-to-fly.com/History/Just%20the%20Facts/wright_bicycles.htm

D.) Ideas!

The *Van Cleave* was built in 1896. It was a good bicycle with two unique innovations, as we have seen. However, it was not something that would change the course of transportation, or of world history. It was a land-based vehicle!

By 1899, the Wright Brothers had some big ideas at play in their minds. As you can imagine these ideas had to do with flying through the air with a machine. Others were trying to do this also. In order for the Wrights to make their ideas become a reality, they needed to do some experiments.

- What kind of tools and materials did they use in order to conduct their experiments? To give you a big hint please look at this picture from 1901. http://www.first-to-fly.com/History%20Images/Wright%20St%20Clair%20bike.jpg
  Does it look like an ordinary bicycle? How is it alike and how is it different? Do you think you could ride it?

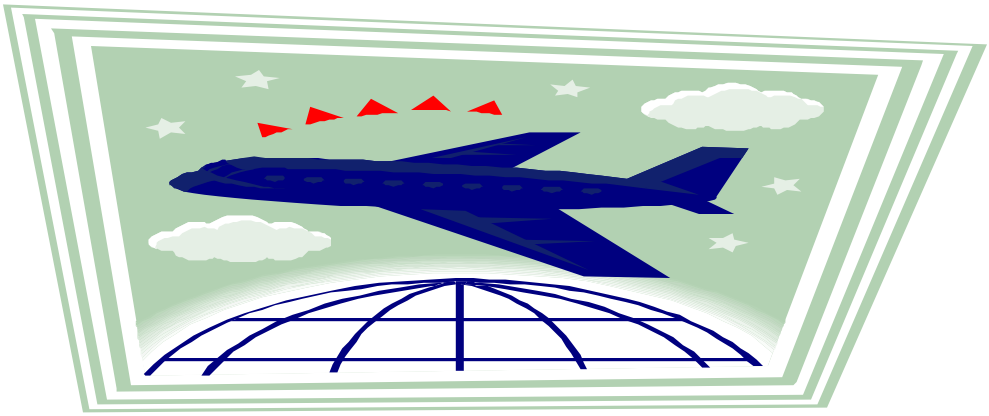
- Next, go to this site and click on the "Bicycle Experiment." http://www.wrightexperience.com/edu/tunnel/testing/index.htm

- You see *Van Cleave* again. Read about an experiment the Brothers conducted to help them fly. Lilienthal was a German experimenter the Wright Brothers respected from reading about his exploits. Lilienthal died in a glider accident in 1896 so Wilbur and Orville did not want to make the same mistake. They used the tools and technology they knew so well, bicycle mechanics, as the basis for their understanding many things having to do with flying. In this experiment, they thought that the flat plate and the 5 degree curved surface (angle of attack) would balance in the wind if they were to pedal down the

street quickly. However, the plates did not balance as Lilienthal and others had written. **What was the balance point? How many degrees?**

See if you can tell with this excellent simulation? You will have to click on the "Wright Brothers on the left of the screen. This will then take you to a screen where you need to click on the "movie and simulation" section on the right. This "Bicycle Balance" page has the simulation. You will feel as though you are speeding down the streets of Dayton with Orville and Wilbur. http://firstflight.open.ac.uk/

- The goal of the Wrights was to move from wheels to wings so they did not stop with the bicycle experiment. If all of the existing wing curve calculation were wrong, they would build their own wind tunnel and would test numerous curved surfaces until they found the best on for their gliders and flyers. Follow this link by clicking on "Bikes and Boxes." http://www.wrightexperience.com/edu/tunnel/index.htm The materials should look familiar in their simplicity. Soon they had answers that they carried from Dayton to Kitty Hawk in 1902.



- ***"Big Idea" Questions:***

  - **Place (Geography):** Describe life in 1900 in terms of distance and travel. Compare it to 2000 and beyond.

  - **Time (History):** What made the Wright Brothers ***part of*** their time and place in history?

  - **Tools (technology):** How did Orville and Wilbur first use the "old" tools and technology around them to explore the "new" problem of flight? What set the Wright Brothers ***apart from*** their time and place in history and led them to an invention that would conquer the air and shrink the distance between any two points on earth?

A Note to Teachers and Parents

These activities are intended to be a Treasure Hunt to provide students in the 4th to 6th grade band an opportunity to work individually, in pairs, or in small three to four person teams. It can be done in school or with home-schooled students. Consider this Treasure Hunt a "table setting" activity; it will lend perspective to the geographic and historical era in which the Wright's lived and worked. Students should be able to conduct this search on their own but have them assemble after each section, or at the end of the activity, to compare findings and to draw conclusions about life in 1900 and the nature of change in transportation systems in the last 100 years.

National Standards

The National Geography Standards: The Uses of Geography

http://www.ncge.org/publications/tutorial/standards/

Standard 17: ***How to apply geography to interpret the past.***

Standard 18: ***To apply geography to interpret the present and plan for the future.***

The National Science Education Standards for Grades 4-6.

http://books.nap.edu/html/nses/html/

Content Standard A – ***Science as Inquiry***

Content Standard G – ***History and Nature of Science***

National Technology Standards

http://cnets.iste.org/

Standard 4: ***Students will develop an understanding of the cultural, social, economic, and political effects of technology.***

Standard 5: ***Students will develop an understanding of the effects of technology on the environment.***

Standard 18: ***Students will develop an understanding of and be able to select and use transportation technologies.***

Standards for All Subject Areas and in All States: A Master Listing by NASA

http://education.nasa.gov/k12.html